2009; 60, 1–2: 1–5
www.intmarhealth.pl

ISSN 1641–9251

VIA MEDICA

The need for international seafarer medical fitness standards

Tim Carter

UK Maritime and Coastguard Agency, London, UK

ABSTRACT

The text of this paper is based on a presentation at the First International Congress of Maritime, Tropical, and Hyperbaric Medicine, 4th July 2009, Gdynia, Poland. The assessment of fitness to work at sea is an important aspect of maritime risk management. The risks in the industry, the approaches used for assessment, and the evidence on which they are based have changed over time. The transition from an industry in which the nationality of seafarers and the ships on which they worked were the same to one in which ownership and crewing have become global means that, as is true for most other aspects of maritime risk management, compatible international criteria for decisions regarding fitness to work are required.

Many parties, including flag states, employers and their insurers, and seafarers and their trade unions, are involved in agreeing international medical fitness criteria. While all have a common interest in improved health and safety at sea, each has their own more detailed agenda of sectional interests. The scope for development of agreed standards and the role of the parties involved is reviewed, and the current arrangements for taking this process forward are discussed.

Contributions from maritime health professionals and other medical and scientific experts are essential to the development of rational and valid criteria, but the decisions on the level of authority to be given to these and the means adopted for ensuring compliance with them are essentially political issues where the voice of those with subject knowledge is only one among many in the processes for adoption and implementation of any new arrangements.

INTRODUCTION

Health risk management in seafarers depends on:

- the provision of safe and healthy working and living conditions;
- effective treatment of anyone who is injured or becomes ill at sea; and
- assessment of people intending to work at sea, to ensure that;
  - those with health problems that could arise while at sea, and
  - those with impairments or medical conditions that could pose a risk to the vessel or to others aboard

are treated if possible, and if not are either restricted to duties or voyages that do not cause a risk or are excluded from seafaring.

The importance of each of these aspects of risk management and the need for intervention should depend on the nature of health risks arising at sea and their consequences for the individual as well as for others aboard. This needs to be considered in terms of safe and efficient ship operations as well as for personal risk.

The evidence base for prioritising seafarer health interventions is limited. There are a few studies specific to seafaring and they range from very old ones about collisions

Tim Carter, MD, Chief Medical Adviser, UK Maritime and Coastguard Agency, Great Minster House, 76 Marsham Street, London SW1 P 4DR, UK, e-mail: tim.carter@virgin.net

attributable to colour vision to more recent ones on overall mortality and on the transmission of tuberculosis [1]. More commonly, as in other modes of transport, data have to be extrapolated from wider population studies, for instance on heart disease, epilepsy, or hypoglycaemia risks [2]. For many relevant conditions, no such evidence is available and consensus views on what is good practice prevail.

Views on good practice, as well as interpretations of data, all too often tend to be adjusted to fit the interests of the person interpreting them. Thus, a seafarer or their trade union will want the most liberal interpretation to secure employment, while the ship operator or insurer will find it easy to adopt criteria that disregard the need to minimise discrimination in the interests of minimising medical costs during a seafarer's contract. All interests will agree on the primacy of maritime safety but even here the interpretations of what is needed can differ. Health professionals can also seek to make assessments over-complex and costly with an eye to their personal and professional position. It is, at least in part, because of these differences that national maritime authorities play a major role in specifying criteria for fitness and the way in which assessments should be undertaken.

THE START OF FITNESS ASSESSMENT

Selection for work at sea has a long history. Ships' masters have always wanted crew members who were capable of undertaking their duties and who did not become ill while at sea, so they informally took a view on any person's abilities and fitness before signing them on. At the same time, the decision to seek work at sea was one that an individual would take. If experience showed the person or the master that an individual was incapable of work at sea, they would cease working there. However, necessity could lead to adverse health and fitness consequences, as any crew were better than none, and work at sea was preferable to poverty.

A few large trading organisations had used surgeons to assess fitness since the seventeenth century but it was not until the mid nineteenth century that this became an area for state intervention. For example, in the UK concerns about the fitness of officers and crew were voiced during the 1860s and this led to the introduction of statutory arrangements that enabled ships' masters to seek a medical examination of any crew member in the major ports in 1867 [3]. The justification for providing access to medical examinations included concern about the role of drunkenness and poor physique as contributors to maritime accidents as well as the risks of serious illness while at sea. A few years later it was proposed that the state should not assist with repatriation costs for seafarers who became ill outside the UK unless a medical examination had been performed when they signed on.

Soon afterwards, concern arose about the contribution of poor eyesight to maritime disasters, and this led to the introduction of acuity and colour eyesight testing at the time when certificates of competence were issued to watchkeeping officers. The testing was done not by doctors but by those who did the oral tests of seafaring competence [4].

The motives for introducing medical examinations and fitness tests were mixed and aimed to serve the interests of maritime safety and the industry as a whole rather than focussing on seafarer benefits. Seafarers and their unions became increasingly critical of examinations at signing on, in particular about the way in which they were conducted. During a major strike in Britain in 1911, a seaman's wife commented that it was not just about low pay but about the way seamen were mauled about during medicals as if they were carcases of New Zealand lamb. The secretary of the International Transport Workers Federation stated in 1923 'Seamen have to line up like cattle, drop their trousers in front of the doctor, and are examined in a dictatorial and bullying way in the presence of officers and shipmates' [5].

CHANGING PATTERNS OF SEAFARERS' HEALTH

During the twentieth century there have been marked changes in the pattern of disease among seafarers as well as in the medical care available to them. Most of the acute infections have become much rarer and more treatable with the development of immunisations, antibiotics for bacterial infections, and prophylaxis for malaria. Some have taken on new forms while following established patterns of spread — concern about serious sexually transmitted infections has shifted from syphilis to HIV. Others have changed their geographical patterns — tuberculosis is now much rarer in seafarers from developed countries but remains a significant problem in many places from which low wage seafarers are recruited.

Medical emergencies at sea once had to be handled by the crew acting on their own initiative but, with the introduction of radio, advice from onshore experts became widely available, as have more recently rapid, if not risk free, evacuation arrangements in coastal areas. There have also been major changes in working conditions: the move from sail to steam and then from coal to the use of oil fuel greatly reduced the physical demands of work. Enclosed bridges made it possible for glasses to be worn for lookout duties. Better food preservation by refrigeration led to major improvements in diet, and standards of accommodation improved.

These changes have been to the good in most respects, but more plentiful food and reduced exercise, as on shore, has resulted in increasing problems of obesity, diabetes, and arterial disease — the latter far and away the com-

monest cause of non-injury death at sea [6]. Changing disease patterns and job requirements mean that the interventions required to manage seafarer health have changed, including the fitness requirements for working at sea.

NATIONAL MEDICAL STANDARDS

For the first three quarters of the twentieth century, most ships were registered with the flags of major maritime nations and were largely, but not exclusively, crewed by their nationals. In this situation each flag state created its own medical examination arrangements which fitted into its administrative structures for maritime regulation and health care using standards that reflected disease patterns in the home country: the exception being colonial territories, where the standards of the colonial power were often adopted as part of their law.

The natural history of disease tended to lead to international convergence in the standards for most common medical conditions, but national examination arrangements differed considerably. Many states identified approved medical examiners or accredited clinics to carry out seafarer medicals. These doctors had varying degrees of training and experience and often did not have access to the past medical history of the individual. They did, however, form part of a managed system which could be motivated towards common standards. In some countries they were independent practitioners, while in others they could be medical advisers to employers, part of the social security arrangements, the doctors who had port health responsibilities, or a part of the naval medical service. An alternative approach was to empower any doctor to perform seafarer medicals using a common pro-forma and then either accept their decisions or require them to submit the forms to a central body that took decisions based on the data provided.

The drivers for these national systems also differed. In some cases they were solely related to maritime safety, while in others they were also concerned with controlling the cost of ill-health — either to social security funds or to employers. The welfare of seafarers was also an underlying issue in most of these systems but was not always clearly expressed. It was rarely possible to mix the selective and potentially discriminatory function of a medical examination leading to a certificate of fitness with the need for a seafarer to be open about physical and mental health problems as the first step towards advice and encouragement on how to lead a healthier life.

A GLOBAL INDUSTRY WITH A GLOBAL WORKFORCE

The maritime industry has always been global but in the later decades of the twentieth century the growth of open registries and the sourcing of seafarers from lower wage countries led to a breakdown of the patterns of employment around which the medical fitness assessment systems of the major maritime states had been built. From an early date the International Labour Office had been concerned about seafarers' working conditions. One of its earliest instruments, a convention in 1921, required medicals for young seafarers, and by 1946 there was agreement on the need for an internationally accepted medical certificate [7]. Despite this, there were few pressures on flag states to harmonise medical fitness standards. Indeed some states and employers learnt by experience that the conduct of medical examinations and the standards applied in practice were less than satisfactory in the other countries from which seafarers were sometimes engaged to crew their fleets. National authorities then adopted a range of restrictive approaches: approval of their own doctors or clinics in crewing countries, acceptance of only a limited list of certificates, or even restriction of access to the required medicals to their own nationals — something that was often supported by unions and social security administrations as a means of retaining maritime jobs.

In parallel, there was a move towards intervention at international level: by the International Labour Office (ILO) as a continuation of its earlier work on living and working conditions and on health care needs at sea, and by the International Maritime Organisation (IMO) in relation to the impact of health related impairment on safe vessel operation. The first international guidelines on seafarer medical examination were published by the ILO and World Health Organisation (WHO) in 1997 [8]. These contained detailed information on the conduct of medical examinations and on standards for vision and hearing but did no more than simply list other medical conditions that had to be 'taken into account' when deciding on fitness. In 2006 the ILO consolidated most of its earlier maritime conventions into the Maritime Labour Convention (MLC) [9]. This is now in the process of acceptance by members and will become legally binding when sufficient states have agreed to ratify it. The key clause on medical examinations is:

'Each medical certificate shall state in particular that:

- the hearing and sight of the seafarer concerned, and the colour vision in the case of a seafarer to be employed in capacities where fitness for the work to be performed is liable to be affected by defective colour vision, are all satisfactory; and
- the seafarer concerned is not suffering from any medical condition likely to be aggravated by service at sea or to render the seafarer unfit for such service or to endanger the health of other persons on board [10].

The convention also states that the examination must be conducted by a duly qualified medical practitioner, there should be a right of appeal, and standards should align

with those in the 1997 guidelines. In a resolution appended to the convention, a review of the 1997 Guidelines was recommended.

The IMO included standards for vision and hearing in its conventions on Standards for Seafarer Training, Certification, and Watchkeeping (STCW). This convention has been modified several times. The current version was produced in 1995 and it included recommendations for vision standards [11]. Work is in progress to produce a revised version, which is due out in 2012. This new version is to include requirements on other aspects of fitness for work, and discussions on these are in progress. There is agreement on the need for physical capabilities to be assessed, and a basic framework for this is now included in the 1995 convention. The correct way to express the criteria needed to reduce the risk of sudden incapacitation or illness while at sea is more contentious and is at present being debated. The IMO, like the ILO, recognise the need for better guidelines for medical examinations.

Both the ILO and IMO, as well as many flag states, employers, trade union organisations, and maritime health professionals, see the problems with medical fitness assessment as it is now conducted. These include:

— variable standards for decision taking;
— differences in the conduct of the examination and of the competence of examiners;
— the danger that examiners may be working in the interests of one party, such as the employer or the seafarer, rather than performing medicals solely to protect maritime safety and seafarer health and wellbeing;
— the failure to protect confidential medical information in some national systems;
— the problems that seafarers have in obtaining a medical certificate when away from their home country;
— the need for multiple examinations and certificates if the seafarer needs to work on a ship of a different flag state from that for which the original certificate was issued;
— the variable responses to allowing limited types of work at sea to continue when a seafarer is fit for some but not all forms of sea service;
— the lack, in some circumstances, of appeal arrangements if the seafarer wishes to challenge the examining doctor's decision;
— the ability of medical examination providers to 'add value' to their services in ways that increase their income but do little or nothing to improve the quality of assessments;
— the problems for enforcement officials when confronted with a wide range of certificates when they undertake ship inspections.

All these limitations could, in principle, be overcome with a more consistent international framework for medical examinations, and there could even be cost savings for all those involved that would more than offset the resource requirements for effecting change.

A REVISED FRAMEWORK FOR INTERNATIONAL MEDICAL STANDARDS

Members of the International Maritime Health Association (IMHA) have been meeting for some years to discuss ways of improving medical fitness assessment. They have prepared a number of draft documents on the assessment of common medical conditions where decision taking is complex but have lacked a means for securing their wider use. In the course of their discussions they have identified many of the ethical and practical issues that need to be addressed in preparing agreed criteria. The requirements of the ILO and IMO for support with the development of international standards and guidelines now provides an opportunity for this work to form the basis for international approaches that, given support from social partners and flag states, can form the basis for a much improved international framework. IMHA has already been closely involved with the IMO and ILO on the wording to be included in the MLC and STW conventions. Recently it has been agreed that the ILO/IMO and WHO will work together on revising the 1997 Guidelines and that IMHA will propose the text on which the revised guidelines can be based.

In essence, the task requires a review of, and improvements to the 1997 guidelines so that these can form the basis for the introduction of more harmonised national standards in those flag states that have there own regulations, or can be used directly where they do not. Some updating of the sections concerned with the conduct of medicals is needed, particularly to cover the need for quality assurance procedures to be put in place, but most of the text remains sound, as do the provisions on hearing and eyesight testing. The main task relates to the clarification of criteria for individual medical conditions and their presentation in an acceptable format. This is a major task, as can be seen by considering the three practical questions posed below:

1. What work can a person return to after a heart attack or stroke? How soon should they go back to sea and how should the severity of any residual effects and the risk of recurrence be taken into account?
2. Is it acceptable for a person who is severely obese and has a limited ability to exercise to work as a ship's cook?
3. Can people who use insulin to control their diabetes work on short sea crossings, and if so in which jobs?

All require consideration both of the available evidence on risk and capability limitations and the individual seafarer's physical and behavioural adaptations to the condition present. They should also need to consider not only routine duties but also the need to respond to emergencies and

the restrictions imposed by living aboard and being distant from expert medical care.

Current thinking on how to codify guidance in such situations is based on the available evidence of risk and the experience that I and a number of the other IMHA members working on this have about the development of national and company fitness standards. However, the challenge is to present this in a way that is both understandable and acceptable internationally. What we are proposing is to tabulate for each of the common conditions covered:

1. Name of condition.
2. ICD codes covered by it (for common data collection and analysis).
3. Justification and rationale for recommendations — as a brief explanatory statement.
4. The circumstances under which a person with the condition would be temporarily or permanently unfit (red category).
5. The circumstances under which a person with the condition could either do some but not all duties at sea or would require surveillance more frequently than the two year validity of a medical certificate (yellow category).
6. The circumstances when a person with, or who has had, the condition should be considered fully fit (green category).

The examining doctors will need additional information on assessment procedures for those conditions where decision taking is complex, to be used as a guide and to increase the consistency of decisions. There is scope for the development of algorithms or decision trees and for presenting these in an easy to use way on screen. The current proposal is for IMH to supplement the revised international guidelines, when agreed, with an examiner's handbook or other information source indicating the clinical methods and tests that should be used to make an assessment of the nature and severity of each condition. Additional information can also be provided here on the evidence underlying fitness criteria, on the advice to be given to seafarers, and on the usefulness of available test and assessment methods.

An initiative of this sort may be new to the maritime sector but similar ones have been successful in aviation and in road transport. Indeed, for aviation there is a tight framework of international standards, and for both road and rail transport there are active regional initiatives, for instance across the European Union. The lessons from these international collaborations include the need to involve from the start all those affected by change and to idenfity where contributions are for the common goal of improving health and safety. Where interest groups are championing their own interests and obstructing well based, practicable, and ethically sound proposals this needs to be recognised, acknowledged, and neutralised by the other groups involved.

The limitations of the evidence base also have to be acknowledged, and methods of using expert consensus that are amenable to challenge and debate by others are required where evidence is lacking. The power of different interest groups in the sector also has to be recognised and balanced. This is why such developments need to take place within the framework of international agencies that can resolve differences and are then able to secure the adoption of agreed procedures. The maritime sector has achieved this in many other fields and it now has the opportunity to turn its attention to seafarers' health. Maritime health professionals need to be rational and convincing collaborators but also need to recognise that the political and regulatory agenda is one that they can inform and enrich but not set.

REFERENCES

1. Report of the Committee on Colour Vision, London, HMSO, 1892; Roberts SE. Mortality from disease among seafarers in British merchant shipping (1976–1995). Int Marit Health 2002; 53: 43––58; Hansen HL, Henrik Andersen P, Lillebaek T. Routes of M. tuberculosis transmission among merchant seafarers. Scand J Infect Dis 2006; 38: 882–887.
2. For example: Charlton J et al. Influence of chronic illness on crash involvement of motor vehicle drivers. Report No 213. Accident Research Centre, Monash University 2004.
3. Report of the Committee of the Society for Improving the Condition of Merchant Seamen. (London, 1867); Williams D. Mid Victorian Attitudes to Seamen and Maritime Reform: The Society for Improving the Condition of Merchant Seamen, 1867. In: Lars Scholl (ed.). Merchants and Mariners: selected writings of David M Williams. St John's, Newfoundland 2000; 229–252. United Kingdom Merchant Shipping Act 1867.
4. Report of the Departmental Committee on Sight Tests. HMSO, London 1912.
5. Marsh A, Ryan V. The seamen: a history of the National Union of Seamen 1887–1987. Oxford 1989; 53, 278.
6. Roberts, 2002.
7. International Labour Office Convention 16: Medical Examination of Young Persons (Sea) 1921. Convention 73: Medical Examination (Seafarers) Convention 1946.
8. Guidelines for Conducting Pre-sea and Periodic Medical Fitness Examinations for Seafarers. ILO/WHO/D.2/1997.
9. International Labour Office. Maritime Labour Convention, 2006.
10. Maritime Labour Convention, 2006. Standard A1.2 para 6.
11. International Maritime Organisation. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978, as amended.